TEAS 7 Science Practice Test

Official-Style Sample Exam

Instructions: This practice test contains 50 questions that mirror the actual TEAS 7 Science section format. You have 60 minutes to complete all questions. Choose the best answer for each question. On the actual test, 44 questions are scored and 6 are unscored (you won't know which ones).

Question Distribution:

- Human Anatomy & Physiology: 18 questions
- Biology: 9 questions
- Chemistry: 8 questions
- Scientific Reasoning: 9 questions
- Mixed Review: 6 questions

HUMAN ANATOMY & PHYSIOLOGY (Questions 1-18)

1. Which of the following best describes the function of the left ventricle? A) Receives deoxygenated blood from the body B) Pumps oxygenated blood to the body through the aorta C) Receives oxygenated blood from the lungs D) Pumps deoxygenated blood to the lungs

2. The hormone insulin is produced by which cells in the pancreas? A) Alpha cells B) Beta cells C) Delta cells D) Gamma cells

3. In which anatomical plane would a cross-section dividing the body into front and back halves be made? A) Sagittal plane B) Transverse plane C) Coronal (frontal) plane D) Oblique plane

4. Which of the following structures is responsible for filtering blood in the kidney? A) Collecting duct B) Loop of Henle C) Glomerulus D) Ureter

5. The process of gas exchange in the lungs occurs primarily in the: A) Bronchi B) Bronchioles C) Alveoli D) Trachea

6. Which hormone is responsible for regulating blood calcium levels? A) Calcitonin B) Parathyroid hormone (PTH) C) Both A and B D) Insulin

7. The sinoatrial (SA) node is located in which chamber of the heart? A) Left atrium B) Right atrium C) Left ventricle D) Right ventricle

8. Which of the following is the correct pathway for urine flow? A) Kidney → Ureter → Bladder → Urethra B) Kidney → Urethra → Bladder → Ureter C) Kidney → Bladder → Ureter → Urethra D) Kidney → Bladder → Urethra → Ureter

9. The primary function of the large intestine is to: A) Digest proteins B) Absorb nutrients C) Absorb water and form feces D) Produce digestive enzymes

10. Which type of muscle tissue is found in the walls of blood vessels? A) Skeletal muscle B) Cardiac muscle C) Smooth muscle D) Striated muscle

11. The hormone ADH (antidiuretic hormone) primarily affects: A) Blood glucose levels B) Water reabsorption in the kidneys C) Heart rate D) Digestion

12. In the digestive system, the function of bile is to: A) Break down proteins B) Neutralize stomach acid C) Emulsify fats D) All of the above

13. Which of the following describes the correct sequence of electrical conduction through the heart? A) SA node → AV node → Bundle of His → Purkinje fibers B) AV node → SA node → Bundle of His → Purkinje fibers C) SA node → Bundle of His → AV node → Purkinje fibers D) Purkinje fibers → SA node → AV node → Bundle of His

14. The respiratory center that controls breathing is located in the: A) Cerebrum B) Cerebellum C) Medulla oblongata D) Spinal cord

15. Which of the following hormones is produced by the adrenal cortex? A) Epinephrine B) Cortisol C) Growth hormone D) Thyroid hormone

16. The functional unit of the nervous system is the: A) Axon B) Dendrite C) Neuron D) Synapse

17. Which chamber of the heart has the thickest muscular wall? A) Right atrium B) Left atrium C) Right ventricle D) Left ventricle

18. The primary site of nutrient absorption in the digestive system is the: A) Stomach B) Large intestine C) Small intestine D) Esophagus

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BIOLOGY (Questions 19-27)

19. During which phase of mitosis do chromosomes align at the cell's equator? A) Prophase B) Metaphase C) Anaphase D) Telophase

20. Which organelle is responsible for protein synthesis? A) Mitochondria B) Ribosomes C) Golgi apparatus D) Endoplasmic reticulum

21. In a Punnett square, if one parent is homozygous dominant (AA) and the other is homozygous recessive (aa), what percentage of offspring will be heterozygous? A) 0% B) 25% C) 50% D) 100%

22. Which of the following is NOT a characteristic of prokaryotic cells? A) Lack of a nucleus B) Presence of ribosomes C) Presence of mitochondria D) Cell wall (in most cases)

23. The process by which plants convert sunlight into chemical energy is called: A) Cellular respiration B) Photosynthesis C) Glycolysis D) Fermentation

24. Which type of immunity provides long-term protection through memory cells? A) Innate immunity B) Passive immunity C) Active immunity D) Natural immunity

25. DNA replication occurs during which phase of the cell cycle? A) G1 phase B) S phase C) G2 phase D) M phase

26. Which of the following macromolecules serves as the primary energy source for cells? A) Proteins B) Lipids C) Carbohydrates D) Nucleic acids

27. The difference between mitosis and meiosis is that meiosis: A) Produces diploid cells B) Produces four genetically identical cells C) Produces gametes with half the chromosome number D) Occurs in somatic cells only

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CHEMISTRY (Questions 28-35)

28. Which of the following elements would most likely form an ionic bond with chlorine? A) Carbon B) Sodium C) Oxygen D) Nitrogen

29. The pH of a solution with a hydrogen ion concentration of 1×10^{-3} M is: A) 3 B) 4 C) 10 D) 11

30. Which of the following best describes a covalent bond? A) Transfer of electrons between atoms B) Sharing of electrons between atoms C) Attraction between positive and negative ions D) Weak attraction between molecules

31. On the periodic table, elements in the same group have the same: A) Number of protons B) Number of neutrons C) Number of valence electrons D) Atomic mass

32. Which of the following is a characteristic of acids? A) pH greater than 7 B) Release OH^- ions in solution C) Turn litmus paper blue D) Release H^+ ions in solution

33. The atomic number of an element represents the number of: A) Neutrons in the nucleus B) Protons in the nucleus C) Electrons in the outer shell D) Energy levels

34. Which type of chemical reaction is represented by: $A + B \rightarrow AB$? A) Decomposition B) Single replacement C) Double replacement D) Synthesis (combination)

35. Water has a high specific heat capacity, which means: A) It freezes quickly B) It boils at a low temperature C) It requires a lot of energy to change temperature D) It has a low density

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SCIENTIFIC REASONING (Questions 36-44)

36. In an experiment testing the effect of fertilizer on plant growth, the independent variable is: A) Plant height B) Type of fertilizer C) Amount of water D) Type of plant

37. Which of the following best describes a hypothesis? A) A proven scientific fact B) A testable prediction about the relationship between variables C) The final conclusion of an experiment D) A summary of experimental results

38. A control group in an experiment: A) Receives the experimental treatment B) Is not subjected to the experimental treatment C) Always shows the expected results D) Is larger than the experimental group

39. Which of the following is the correct order of steps in the scientific method? A) Hypothesis → Observation → Experiment → Conclusion B) Observation → Hypothesis → Experiment → Conclusion C) Experiment → Hypothesis → Observation → Conclusion D) Conclusion → Hypothesis → Observation → Experiment

40. If a study shows that people who exercise regularly have lower rates of heart disease, this demonstrates: A) Causation B) Correlation C) Proof that exercise prevents heart disease D) Random occurrence

41. Which of the following would be considered a confounding variable in a study about diet and weight loss? A) The type of diet B) The amount of weight lost C) The participants' exercise habits D) The duration of the study

42. In experimental design, what is the purpose of randomization? A) To make the study more complicated B) To reduce bias and ensure fair comparison C) To increase the sample size D) To speed up data collection

43. Which of the following statements represents a scientific theory? A) An educated guess B) A well-substantiated explanation supported by evidence C) A single experimental result D) An untested idea

44. When analyzing data, which measure of central tendency is most affected by extreme values? A) Mean B) Median C) Mode D) Range

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MIXED REVIEW (Questions 45-50)

45. Which of the following is both a risk factor for cardiovascular disease AND can be modified through lifestyle changes? A) Age B) Gender C) Smoking D) Family history

46. The molecule that carries genetic information from DNA to the ribosomes is: A) mRNA B) tRNA C) rRNA D) DNA polymerase

47. Which of the following pH values represents the strongest base? A) pH 7 B) pH 8 C) pH 10 D) pH 12

48. The process by which the body maintains a stable internal environment is called: A) Metabolism B) Homeostasis C) Circulation D) Respiration

49. In genetics, an individual with two different alleles for a trait is called: A) Homozygous dominant B) Homozygous recessive C) Heterozygous D) Codominant

50. Which of the following laboratory safety practices is most important when working with chemicals? A) Wearing safety goggles B) Having a fire extinguisher nearby C) Working in a well-ventilated area D) All of the above

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ANSWER KEY

1. B | 11. B | 21. D | 31. C | 41. C
2. B | 12. C | 22. C | 32. D | 42. B
3. C | 13. A | 23. B | 33. B | 43. B
4. C | 14. C | 24. C | 34. D | 44. A
5. C | 15. B | 25. B | 35. C | 45. C
6. C | 16. C | 26. C | 36. B | 46. A
7. B | 17. D | 27. C | 37. B | 47. D
8. A | 18. C | 28. B | 38. B | 48. B
9. C | 19. B | 29. A | 39. B | 49. C
10. C | 20. B | 30. B | 40. B | 50. D

DETAILED EXPLANATIONS

Human Anatomy & Physiology Explanations

Question 1 (B): The left ventricle is the strongest chamber of the heart and pumps oxygenated blood through the aorta to supply the entire body with oxygen-rich blood.

Question 2 (B): Beta cells in the islets of Langerhans produce insulin, which lowers blood glucose levels. Alpha cells produce glucagon, which raises blood glucose.

Question 3 (C): The coronal (frontal) plane divides the body into anterior (front) and posterior (back) portions. The sagittal plane divides left and right, while the transverse plane divides top and bottom.

Question 4 (C): The glomerulus is a cluster of tiny blood vessels where filtration occurs. Blood pressure forces water and small molecules through the glomerular membrane.

Question 5 (C): Alveoli are tiny air sacs where oxygen and carbon dioxide exchange occurs between the air and bloodstream through thin respiratory membranes.

Biology Explanations

Question 19 (B): During metaphase, chromosomes line up at the cell's equatorial plane (metaphase plate) before separating during anaphase.

Question 21 (D): When crossing AA × aa, all offspring receive one dominant allele (A) and one recessive allele (a), making them 100% heterozygous (Aa).

Question 23 (B): Photosynthesis converts light energy into chemical energy (glucose) using carbon dioxide and water, while releasing oxygen as a byproduct.

Chemistry Explanations

Question 28 (B): Sodium (Na) readily loses its single valence electron to chlorine (Cl), which needs one electron to complete its outer shell, forming ionic NaCl.

Question 29 (A): pH = -log[H^+]. With [H^+] = 1 × 10^{-3}, pH = -log(10^{-3}) = 3. This represents an acidic solution.

Scientific Reasoning Explanations

Question 36 (B): The independent variable is what the researcher manipulates (type of fertilizer). The dependent variable is what's measured (plant growth).

Question 40 (B): This shows correlation - two variables changing together. Causation would require controlled experiments proving exercise directly causes lower heart disease rates.

Scoring Guide:

- 44-50 correct: Excellent (88-100%) - Ready for TEAS
- 35-43 correct: Good (70-86%) - Needs focused review
- 26-34 correct: Fair (52-68%) - Requires significant study
- Below 26: Poor (<52%) - Needs comprehensive preparation